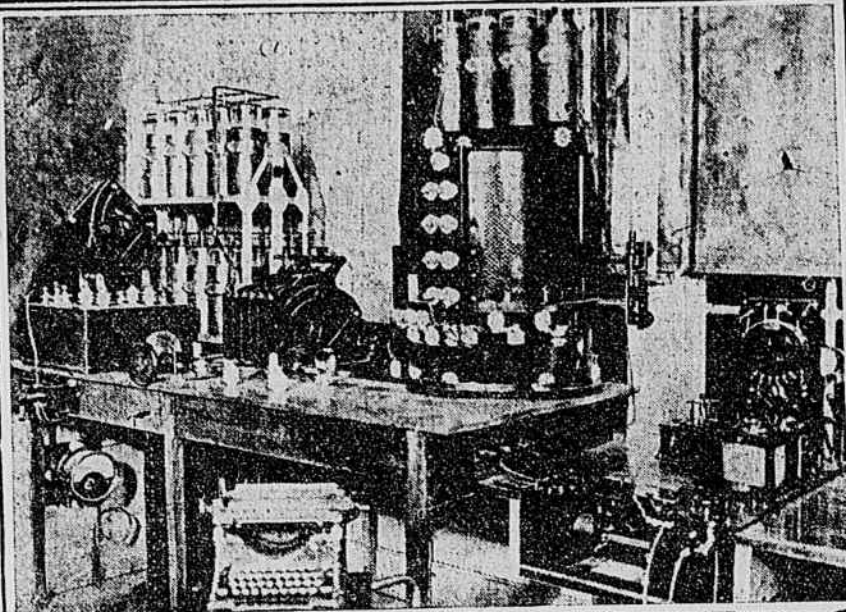
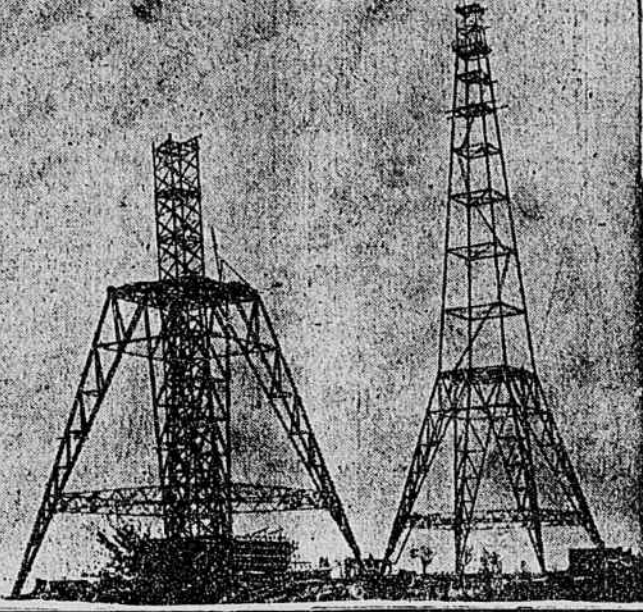


# Commercial Wireless Companies Will Be Made to Toe the Mark



Wireless Station U. S. Navy.



Building the Great Wireless Towers, Arlington, Va.



Group of Naval Wireless Operators.

BY JOHN ELFRETH WATKINS.

THE terrible Titanic tragedy will confer one benefit upon humanity. It will emancipate the wireless telegraph from the arbitrary power of commercialism and place it under strict governmental regulation, assuring eternal vigilance for distress calls at sea, absolute precedence for such signals for help and better equipment for their utterance.

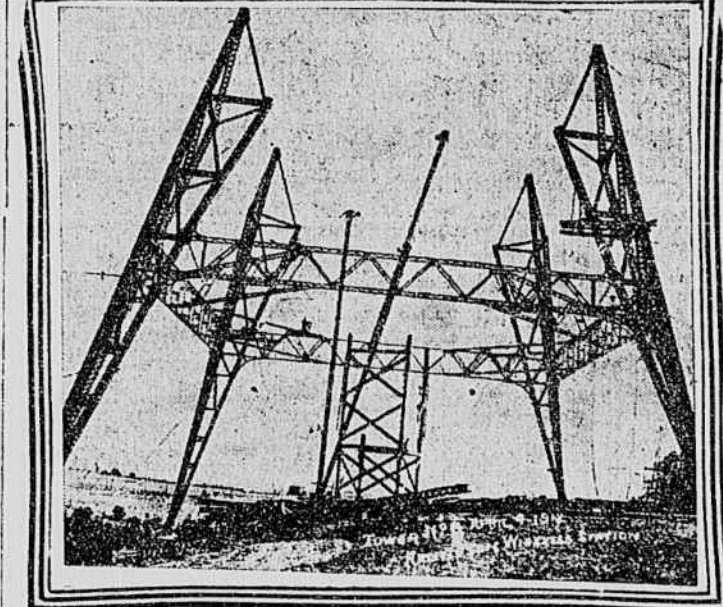
The Congress of the United States is now at work upon a parliament of the great nations of earth will next month be engaged upon rigid laws to prevent, in future, such a babel of wireless tongues, such a feebleness of wireless ears, such interference by meddlesome wireless amateurs, and such greed of wireless commercial interests as contributed to the suspense, the horror and the death toll of old ocean's most monstrous tragedy.

New legislation for the "regulation of radio communication" has lately been reported favorably to both houses of Congress. It is carried in a bill carefully framed by the wireless experts of the navy, army and Department of Commerce and Labor. It is designed to put a quietus upon the long-threatening monopoly of all the powerful wireless interests, not only of America, but of the world; to give distress calls from the sea an absolute right of way; to prevent the interference of commercial messages with official and emergency messages.

**All Operators to Be Licensed.**  
The first step toward giving the Federal government an actual hold upon all wireless stations in our territory or upon our ships will be a strict requirement that each station and all of its operators must obtain a Federal license, also that all operators must be American citizens.

To prevent interference with government or distress messages each commercial station will be limited by its license to certain "wave lengths" for carrying its messages, also to certain hours of work. Under the existing system operators send out their dots and dashes upon electric waves varying in length, generally, from 100 to 6,000 meters—a meter being very nearly a yard. To get clear results sending and receiving instruments must be adjusted, or "tuned," to the same limits of wave length.

The government will tune all of its instruments to receive and send only waves that are between 600 and 1,000 meters in length, and will prosecute any private or commercial concern which transgresses within these limits. Such concerns will be allowed to tune their instruments above and below these pitches, but will be prevented



Base of One of Big Towers.

from monopolizing too great ranges of wave length when certain narrow ranges will set up their purposes just as well.

**Fixes Standard Distress Wave.**  
A "standard distress wave" for ships is one of the most important provisions of the bill. A wave length of 300 meters must be uniformly reserved for this emergency call by all wireless stations, official, commercial or private, on sea or on land. Each passenger-carrying vessel will be required to keep in operation, day and night, an extra instrument tuned to maintain external vigilance for calls for help that may come meaning over the relentless deep. This emergency call will be known as a "special distress receiver," and the government's experts seek legislation requiring such apparatus beside the quartermaster's lookout of every ship; also that all men employed at the wheel or upon watch shall be adequately trained to distinguish the international distress call, "S. O. S.," whenever this special instrument utters it.

**S. O. S.—"Save Our Ship."**  
This distress call, instead of the old

"C. Q. D." of Jack Binns fame, the bill adopts for America. It will be remembered that the Titanic's operators used both signals while she was going down. The "S. O. S." has been adopted by other countries because its three dots, three dashes and three dots (— — — — —) compose a signal readily distinguishable even by the untrained ear. While, therefore, not chosen because it abbreviates any words, sailors fix "S. O. S." in their minds as meaning "save our ship."

Each ship and shore station must be equipped to utter as well as to receive this cry for help, day and night, over a distance of at least 100 miles. "Absolute priority" is given to "signals and radiograms relating to ships in distress," and all wireless stations, at sea or ashore are required to cease all sending when they hear a distress call. Except when answering or aiding a vessel thus appealing for help, they must refrain from sending until all wireless business relating to the emergency has been completed.

To prevent ships unnecessarily interrupting wireless business of shore stations near great seaports it will be re-

quired that they reduce the electrical energy of their transmitters upon approaching within fifteen miles, and that they reduce it still further when within five miles. Ship and shore stations will be bound to interchange messages whether employing the same wireless systems or not. And at important ports wireless commercial wireless business interferes with the wireless work of military and naval stations the first fifteen minutes of each hour will be reserved for Uncle Sam's radiograms, a division of time which will be demanded, however, only after other means of preventing interference have failed.

Distress signals are made an exception to this rule, as well as to another—that wireless stations must use only the minimum strength of electrical energy necessary to carry their messages to the distance required.

**Curbs Interfering Amateurs.**  
That interfering amateurs were partly responsible for the confusion of wireless tongues that added to the public suspense following the Titanic catastrophe has been frequently charged. The bill before Congress puts a curb upon amateurs and all other wireless enthusiasts not engaged in bona fide commercial transmission. They will be restricted to a low electric power and a short wave length—200 meters. This limit the bill's framers deem sufficient for all purposes of amusement or instruction, and will carry messages over a large city area.

As attested by the variously poised wireless masts which detract from the beauty of many towns, there now are thousands of these wireless amateurs scattered through the country and the government realizes that some valuable operators are sometimes developed by this diversion. So, to encourage those who are really serious in their activities and who develop inventiveness in their art, there is a provision in the measure allowing those to test their skill under a special temporary license, which, during certain hours will waive restrictions as to power and wave length.

To further prevent interference with official wireless business the measure forbids the erection of future commercial wireless stations within fifteen nautical miles of a list of important naval and military stations, not including, however, those at our most important commercial centers.

**Give Us Wireless Supremacy.**  
These protected points are to be especially a great chain of "high power" radio stations, which will give America wireless dominion over the seas. The key to this vast system will be a group of giant towers already bristling above the hills of Arlington, Va., in full view of the National Capital's avenues. The tallest of these steel structures will rise 556 feet from the ground, which means that from base to pinnacle it will be 95 feet higher than the Washington Monument itself, and as the hill which this steel steely will crown is higher than the stately monument dedicated to the Father of his Country, the wireless reach of this high-power station will be vastly greater than could be obtained from the monument's aluminum apex.

By all odds, this will be the tallest tower ever built for wireless purposes in any part of the world. It will be 150 feet square at the base and between its spreading legs could easily be built four blocks of average city residences, allowing seven homes to the block. To the east of this colossal and at equal distances therefrom will stand two similar pinnacles of steel, each 556 feet high, and 120 feet square at the base, and the group when completed will look very like the Eiffel tower, although, acting together, they will have far greater wireless reach than the famed Paris giant, lately converted into a wireless station.

**Spreads Net Across Sky.**  
From the tip of the highest to the

apex of each of the lower towers will fall a cable 160 feet long and another such cord of steel, 800 feet in length, will sag between the crests of the twin structures. Upon these great ropes of wire Uncle Sam will spread his giant nets which are to gather from the heavens distress signals and other wireless messages dashed from as far west as San Francisco, as far east as the African leg of sunset, and from anywhere between Panama, big ditch to Greenland's icy mountains. These nets, or "antennae," will consist of a half-dozen seventy-two-foot "spreads," each supporting a giant harp of nineteen wires, four feet apart.

Just in front of the pair of smaller towers are rising two connected buildings containing living quarters and a kitchen for twenty operators; also two modern wireless laboratories, a machine shop, power room, engine room, store room and operating room. The towers will cost \$110,000 and the building \$70,000.

A commissioned officer of the navy will be detailed to command this station, just as though it were a ship. By land wires it will communicate with the desk of the President or with the Navy Department as promptly and directly as though it were erected upon the roof of the White House or the State, War and Navy building. In time of war the President and his Cabinet could speak, through this station, with our ships and armies in almost any corner of the world.

Indeed, the vast chain of high-power stations of which this, at Arlington, will be the key will be more tremendous in scope than any similar system planned or dreamed of by any other nation on earth.

**Spans Three-Fourths of World.**  
The three bristling towers upon the Potomac will communicate directly with a similar group 2157 miles away, at San Francisco and still another 1,730 miles away upon the Canal Zone and visible leagues and leagues across both oceans. And inasmuch as each of these stations will have a range of at least 3,000 miles, their dots and dashes will be hurled against Africa's sandy shores with little difficulty.



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Each will also bombard a similar group of towers at Pearl Harbor, Hawaii, and this station in the isle of hula will relay the dots and dashes and shoot them over to a like set of triple towers erected at Guam and American Samoa. Then Guam will lead them into its electric gun and aim the bullet upon the Philippines, where still another set of these steel spires will crown a palm-clad hill of Luzon. And the Luzon station in its turn can fire the messages as far as central India or the restless heart of the new Chinese republic. Were there such a station in these Oriental regions, as well as upon Africa's sunny shore the system would belt the world. So far as it goes, it will span three-fourths of that good old spinning top—all save a gap of some 6,000 miles extending from Central India to West Africa.

No other nation can erect such a chain and thus gain wireless dominion over all the oceans, for no other nation can gain a foothold for such towers both upon our continent and upon the fairs of the Pacific. And no other nation can knock these towers down. Cannon balls would go right through them, without injury, as through the network masts of our fighting ships. The system will place the big Panama ditch, our most important strategic possession, in constant, unintermittent and instantaneous touch with Washington, whether cables are cut or not. Washington will talk directly with the entire north Atlantic Ocean. Instead of relaying its messages, as now, through Norfolk or Key West. Similarly, Panama will be made the key to the entire South Atlantic, Samoa the key to the south Pacific, Hawaii the key to nearly the whole Pacific, Guam to the west Pacific, Manila, to the waters of China, Asia, Russia and our rival, Japan. Communication directly across our continent, from Washington to San Francisco, will be instantaneous, whereas to-day the commercial land wires must be depended upon. From his sanctum the President will be able to talk with his ships scattered everywhere between the Canary Islands and the China Sea.

**Range of Distress Signals.**  
He will be able to distribute distress calls "among all ships within 2,000 miles of one of these high-power stations at night, or within 1,000 miles during the day. He will be unable, however, to hear distress calls sent to him by ships farther away than 100 miles at night or 200 miles during daylight. But he will have upward of fifty small wireless stations and countless wireless stations co-operating with these high-power wireless plants, and the former will relay emergency messages to the nearest group of giant towers.

These differences in range for night and day are due to the fact that the sun's rays greatly absorb the wireless electric waves. The government's experts regard the natural conditions surrounding the Titanic as especially favorable to a long wireless range on the night she sank, not only because it was dark, but because it was cold weather. Winter, as well as darkness, increases the reach of these feeble dots and dashes.

**Hearing the Grass Grow.**  
As old Mother Earth puts on more and more of her spring attire the reach of wireless messages shortens. In their laboratory, at Washington, the navy's experts are now experimenting to accurately measure this effect of increasing foliage and vegetation. While the summer is coming on they are receiving test messages sent at regular intervals from Philadelphia, Annapolis and Norfolk, and with delicate instruments are noting the gradual weakening of the electric current. Thus, you might say, they

Rear Admiral Cone, in charge of Naval Wireless Corps.

are hearing the grass grow and the May blossoms burst from their buds. And all this has a direct saving of life at sea. Because of the ever-present foliage on the surrounding land, ships in the tropics cannot send their distress signals over more than half the range which vessels in the temperate zones can cover.

The great chain of high-power stations described will be constructed under the direction of Rear Admiral Hutch L. Cone, U. S. N. The entire series, when completed, will have a cost of a million dollars and each group of towers as well as the fifty odd small stations co-operating with the series will be equipped with special distress receivers kept as eternally alive as were the temple fires of the Vestal virgins.

**Wireless World Parliament in June.**  
As suggested above, all of the enlightened nations of the world are next month to meet in a parliament which will give wireless business a universal overhauling and require commercial companies to toe a mark that is narrow and straight. This body will be known as the International Radio-Telegraphic Convention, and it will sit in London. President Taft will send delegates who know every wireless problem from A to Z. They will co-operate with representatives of other nations in framing regulations which will require every ship of every flag to adopt the standard distress signal, distress wave and wireless receiver of 100-mile range, and will require universal use of what are known as "pure" and "sharp" waves. The Titanic tragedy will suggest to this parliament many reforms whose need would not have otherwise presented themselves. A number of these will be made evident by the testimony gathered by the senatorial committee that is now sitting as a coroner's inquest upon the bones of the ill-starred Titanic's 1,635 victims. (Copyright, 1912, by John Elfreth Watkins.)

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